SOFTWARE DEVELOPMENT PLAN TEMPLATE

March 22, 2000

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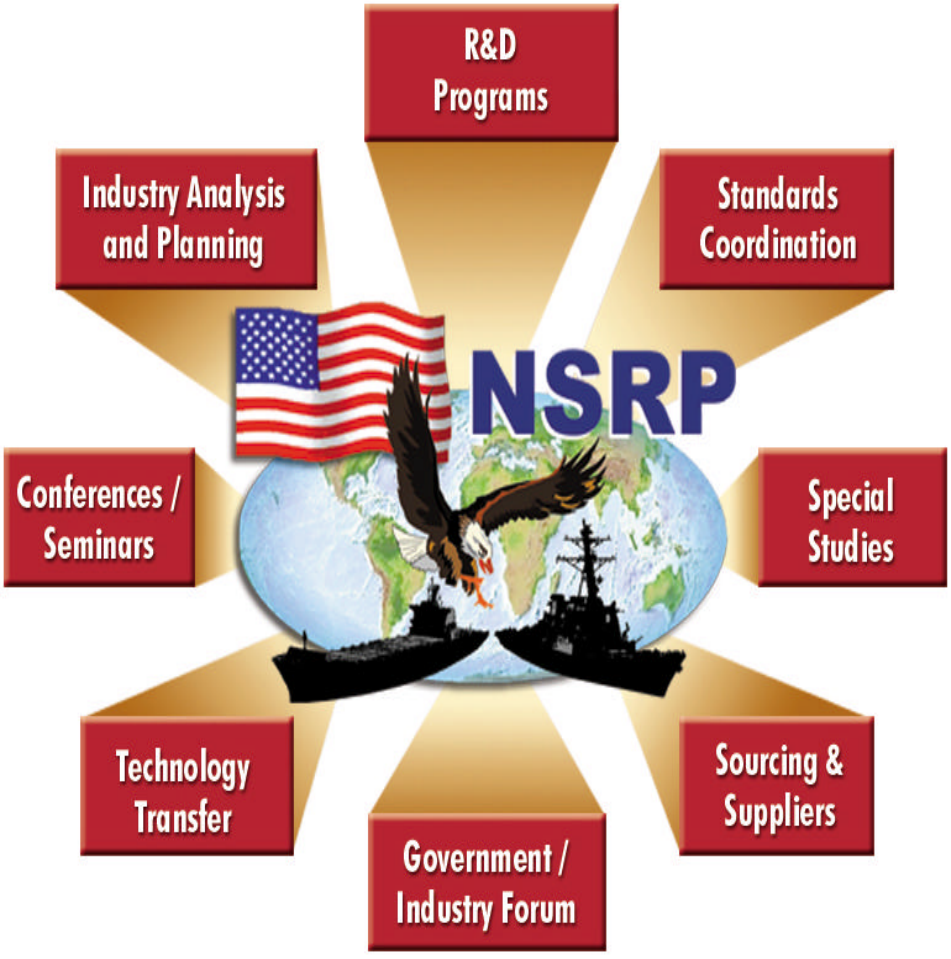
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NSRP Software Development Plan Template
March 22, 2000

Background:

NSRP is an innovative approach in public/private cooperation to manage cost-shared R&D for technologies critical to the shipbuilding industry and the Navy.

- ??NSRP is led by a collaboration of 10 U.S. shipyards working as a team with government, industry and academia to achieve the continuous product and process improvements necessary for the U.S. shipbuilding industry to become internationally competitive, directly resulting in more affordable Navy ships.
- ??NSRP aids industry in developing and adopting advanced technologies and innovative business practices that have been targeted based upon potential industry-wide ROI.

NSRP's flagship R&D program, Advanced Shipbuilding Enterprise (ASE), is focused on improving the commercial competitiveness of the U.S. shipbuilding industry, thereby reducing the cost of Navy ships.

- ??R&D costs are jointly funded by industry and the Navy.
- ??The R&D strategy is industry-led to promote commercial competitiveness and reduce warship cost.

Use of the Software Development Plan Template

The requirements for the NSRP Advanced Shipbuilding Enterprise program include the preparation of a software development plan as a deliverable whenever software is developed as a part of the authorized project. The attached Template is a guide for the preparation of the required software development plan. It has sections and content descriptions for each of the main parts of a software development plan. Not all sections are required in all cases. It is the responsibility of the project technical lead and the Program Technical Representative (PTR) to agree on the content of the plan and use the template according to the needs of the particular project.

The detail and the level of the plan will vary depending upon the scope and complexity of the project. For a small software development effort which will not result in software that is maintained for a long period of time, a very short and brief plan is all that is required. For a large development effort in which several development activities are involved and will result in deliverable software that must be turned over to a maintenance activity or commercial enterprise for sale, a more extensive plan is required. In all cases there must be a schedule, a description of the development organization, configuration management, the software delivery media and interfaces, and a test plan to the level of detail that is commensurate with the scale of the software being developed.

document or technical report identifier,
revision identifier and date

SOFTWARE DEVELOPMENT PLAN FOR THE

SYSTEM TITLE

Project Title

Prepared for:
NSRP ASE project

Prepared by:

Project technical Lead
Mailing Address
Department Telephone Number

Prepared by _____ Date _____
(project lead)

Reviewed by _____ Date _____
(contractor SQA)

Approved by _____ Date _____
(Project Technical Representative (PTR)

Approved by _____ Date _____
(MI Team Leader) (Optional)

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1. SCOPE

Provide overview explanation of the software system.

1.1 Identification

Identify the system to which this SDP applies. Identify the specific software that is being developed/modified.

1.2 System overview

Briefly state the purpose of the system and/or the software to which this SDP applies. Briefly identify the project sponsor, user, developer and support agencies.

1.3 Document overview

Summarize the purpose and contents of this document (review the paragraphs' subjects and briefly restate).

1.4 Relationship to other plans

Describe any relationship to related project management plans.

2. APPLICABLE DOCUMENTS

List documents by number and title referenced as fundamental to this plan. Documents providing background or tutorial information may be listed in an appendix.

3. SOFTWARE DEVELOPMENT MANAGEMENT *(NEW PAGE)*

3.1 Project organization and resources

3.1.1 Facilities

Describe the facilities to be used. Highlight the location of project-specific resources such as software engineering environment and software test environments. Supply schedule when facilities will be needed.

3.1.2 Customer-furnished equipment, software and services

Describe the customer-furnished equipment, software, services required for this effort. Include schedule when items are needed.

3.1.3 Project organization

Provide a chart describing the overall project organizational structure including relationship to customer and management. Identify the authority and responsibilities of each organization. Delineate any subcontractor organizations, people and roles.

3.1.4 Personnel

Total and list the number of people necessary to complete the project by labor category or skill groupings: project management, software engineering, testing, Software Quality Assurance, Configuration Management and other functions identified.

3.2 Schedule and milestones

Schedule information is generally best combined and presented graphically (e.g., GANTT or PERT charts).

3.2.1 Activities

Briefly describe each software development activity and associated schedule (based on the total project schedule). Indicate all significant events: reviews, key meetings, demonstrations, audits, etc. For each activity, indicate: start date, complete date (on chart). Note areas of high risk.

3.2.2 Activity network

Describe the sequential relationship among the activities of the project and identify those activities that impose the greatest time restrictions on project completion.

3.2.3 Source identification

Identify the source of the required resources (software, firmware, hardware) and provide a plan for obtaining the resources. Note the "need date" (milestone) and projected availability of each item.

3.3 Risk management

Describe procedures for management areas of risk to successful project completion. Include:

a. *known risk areas ranked by severity*
b. *factors contributing to the potential occurrence of each risk item*

c. *project procedures for monitoring (e.g., periodic reviews) and reducing risk factors (e.g., prototypes, feasibility studies)*
d. *contingency procedures for each area of risk.*

3.4 Security

Describe security plans if project contains security requirements.

3.5 Communication with other contractors

Describe plans for needed communication among project contractors or group performing independent testing or validation.

3.6 Subcontractor management

Describe plans for managing subcontractors. Describe measures and reporting frequency for tracking subcontractor progress on this project.

3.7 Formal reviews

Describe internal preparation for and conducting of formal reviews.

3.8 Software development library

Describe the software development library (SDL) to be used for controlling and retaining the project software and documentation. Include the location, contents, responsible person for establishing and implementing the SDL, and methods for control of data stored in the SDL.

3.9 Corrective action process

Describe the corrective action process to be implemented on the project, including the recording and tracking of problems/actions, the responsible parties and reporting to management.

3.10 Problem/change report

Describe the format to be used for problem/change reports. These reports are used to track problems detected in the software, documentation or the process, and the corrective action needed to resolve the problems..

3.11 Progress reporting

Describe the reports, including measures of progress to planned schedules and budgets, that are planned for regular delivery to management and the customer. Include report type and frequency in the project software schedule.

4. SOFTWARE DEVELOPMENT MANAGEMENT *(NEW PAGE)*

4.1 Organization and resources

4.1.1 Software engineering organization

Refer to paragraphs 3.1.3 and describing the software engineering organization. Show relationship with other organizations e.g., those performing software testing. Identify the authority and responsibilities of each organization. Include the reporting chain of any subcontractors.

4.1.2 Software engineering personnel

Describe the number and skill levels of personnel who will perform the software engineering activities. Describe by title and minimum qualifications for each position.

4.1.3 Software engineering environment

4.1.3.1 Software items

Identify the operating system, compilers, CASE tools, and other tools necessary to perform the software engineering activities. Identify any proprietary rights to the software, if appropriate.

4.1.3.2 Hardware and firmware items

Identify the computer hardware, interfacing equipment and firmware items that will be used in the software engineering environment. Describe the purpose of each item and identify any security issues or proprietary rights to the equipment.

4.1.3.3 Installation control and maintenance

Identify plans for installing and testing each item of the software engineering environment prior to its use. Describe plans to control and maintain each item, especially if other projects share the resource.

4.2 Software standards and procedures

4.2.1 Software development techniques and methodologies

Identify and describe (or reference) the techniques and methodologies that will be used to perform: requirements analysis, design, code and unit testing, integration and system testing.

4.2.2 Software development files

Define plans for creating and maintaining software development files (SDFs). Define the contents of the SDFs and the procedures for maintaining the SDFs.

4.2.3 Design standards

Describe or reference the design standards to be used in developing software.

4.2.4 Coding standards

Describe or reference the coding standards to be used in developing software.

4.3 Non-developmental software

Identify and describe any non-developmental software items (commercially available, reusable or customer-furnished software) to be incorporated into the system. Briefly describe the rationale for the use of each such item.

5. TEST PLANNING *(new page)*

5.1 Organization - testing

Describe the testing organization. Refer to paragraphs 3.1.3 and/or 4.1.1 for this information.

5.2 Test approach

Describe the basic approach for testing the software products.

5.3 Software test environment

Identify the software, hardware, interfacing equipment and firmware items required to accomplish testing.

5.4 General test requirements

Describe test requirements that apply to all the tests to be performed, for example:

a. Computer program size and execution time shall be measured.
b. Computer program shall be tested using nominal, maximum and erroneous data.
c. Computer program shall be tested for error detection and proper recovery.

5.5 Test definition

Briefly describe each test to be performed: informal testing (unit and integration), formal testing (demonstrations, evaluations by non-development group), resources required. Describe any data recording/reduction/analysis to be performed.

5.6 Test schedule

Provide or reference the test schedule.

5.7 Test planning assumptions and constraints

Describe any assumptions that were made in test planning and any constraints imposed upon by the customer.

6. SOFTWARE PRODUCT AND PROCESS EVALUATIONS *(new page)*

6.1 Organization - software quality assurance

Refer to paragraphs 3.1.3 and/or 4.1.1 for this information. Describe the SQA organization, responsibilities, relationship to software engineering, testing and SCM.

6.2 Software product evaluations procedures and tools

6.2.1 Procedures

Describe procedures that will be used to evaluate the software and associated documentation.

6.2.2 Tools

Identify, define the purpose and description of tools to be used in the software product evaluation. To reduce duplication, references may be made to tools that are also used in the software engineering or software test environments.

6.3 Subcontractor products

Describe plans and procedures for evaluating the adequacy of requirements established for subcontractors, and for evaluating subcontractor products.

6.4 Software product and process evaluation records

Describe plans for maintaining records of each product and process evaluation performed. Identify the record formats to be used and the information to be recorded.

6.5 Activity-dependent product and process evaluations

The following paragraphs address plans for product and process evaluations during each of the software development activities (i.e., requirement analysis, design, code and unit test, integration and test, system test).

6.5.1 Software products and process evaluation - (*activity name)*

Identify specific products and the evaluation criteria to be used. Identify tools and procedures to be employed.

7. SOFTWARE CONFIGURATION MANAGEMENT *(new page)*

7.1 Organization and resources - configuration management

Refer to paragraphs 3.1.3 and/or 4.1.1. Describe SCM functions, responsibilities and skills. Define the members and role of the Configuration Control (or review) Board.

7.2 Configuration identification

7.2.1 Developmental configuration identification

Identify internal software items that will be controlled. Describe the method for establishing the configuration.

7.2.2 Identification methods

Describe the naming, marking, numbering of the software files and documentation that will be used to identify the software products. Describe how revisions to these products are identified.

7.3 Configuration control

7.3.1 Flow of configuration control

Provide a graphical description of the process by which software problems and changes are submitted, reviewed and resolved.

7.3.2 Reporting documentation

Describe the reporting forms to be used in controlling software problems and changes.

7.3.3 Review procedures

Describe the procedures to be followed by the review board.

7.3.4 Storage, handling and release of project media

Describe the storage library for the software and documentation, and the archival methods used for retention of project media.

7.3.5 Additional control

Identify any additional configuration control activities not discussed above.

7.4 Configuration status accounting

Define the records to be maintained and the reports to be made on the configuration status.

7.5 Controlling documentation change

Describe procedures to prepare for and respond to approval of documentation and specifications. Include: submitting documents to the customer for review; ensuring approved changes have been incorporated; and updating the configuration status accounting reports to reflect approved baseline(s).

7.6 Product release

Describe the methods for releasing software products including: verifying incorporated changes, obtaining customer review/approval, handling materials to be stored, and updating status accounting records with approved baseline. Describe any procedures for delivery to the customer.

7.7 Configuration management major milestones

Identify the major internal and external (customer-involved) milestones related to software configuration management.

7.8 Vendor and subcontractor management

Describe methods used to control and verify subcontractor and vendor products.

8. NOTES *(new page)*

This section is used to contain any general information that aids in understanding this plan, including an alphabetical listing of all acronyms, abbreviations and their meanings as used in this plan.

APPENDICES *(new page)*

Appendices may be used to provide information published separately for convenience in document maintenance (e.g., oversized charts, classified data). Each appendix is referenced in the main body of the plan. Appendices are lettered alphabetically (A, B, etc.) and may be bound as separate documents for ease in handling.

LIST OF FIGURES

Provide a list if there are more than three figures included in the plan.

LIST OF TABLES

Provide a list if there are more than three tables included in the plan.

Table 1 Sample Table Heading

MISSION

NSRP's mission is to manage and focus national shipbuilding research and development funding on technologies that will reduce the cost of warships to the U.S. Navy and will establish U.S. international shipbuilding competitiveness. NSRP also provides a collaborative forum to improve business and acquisition processes.

An industry collaboration working with government and academia to manage and focus a new national technology strategy for shipbuilding

For more information on NSRP ASE activities:

- R&D (ASE and others)
- Industry Analysis/Planning/Forecasting
- Government/Industry Forum
- Standards Coordination
- Conferences/Seminars
- Sourcing & Supplier Integration
- Technology Transfer
- Special Studies

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